

Investigating the existing state of health information dissemination on the TikTok short video platform and potential solutions

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Abstract: Health information dissemination is a necessary public health matter, and the Jitterbug short video platform has helped to improve the effectiveness of health information dissemination. In the short video platform, health information has the advantages of equalized audience reception, accurate information dissemination, and diversified presentation methods. The content analysis of the short videos on the TikTok short video platform that have good dissemination effects shows that detailed exposition, high credibility, and the use of multiple communication strategies are common features of these videos, which can be promoted as experience. At the same time, the content analysis also reveals that the current health information dissemination on short video platforms has problems of audiences' difficulty in distinguishing the authenticity of the information and the anxiety caused by the information. Therefore, in the future development of health information dissemination, information disseminators should improve their communication skills, the government should promote the construction of an online and offline collaborative health information dissemination pattern, short video platforms should improve health information identification and warning mechanisms, and audiences should also improve their own media literacy.

Keywords: health information dissemination; short video; development strategy

1. Introduction

Health is an eternal topic for human beings, and countries around the world have made improving the quality of public health and sanitation a priority strategy for social development. Especially since the outbreak of the new crown pneumonia in January 2020, health has become the focus of much public attention. Achieving universal health coverage is an important goal of the United Nations' 2030 Agenda for Sustainable Development, and a cause to which our country has been committed to implement and seek cooperation from many parties, and efficient health information dissemination is an important part of this cause. According to the American scholar Rogers, "Health Communication (HCC) is an interpersonal communication whose content is health-related and whose purpose is to reduce the rate of disease transmission and mortality by spreading medical and health knowledge and changing the audience's attitude and behavior." The communication of health information aims to disseminate medical research results to the audience to impact their attitudes and behaviors, thereby reducing the transmission and mortality rate of diseases and effectively improving the quality of life and health of the public. As early as the traditional media era, health information has been disseminated through various types of media, as amply evidenced by health columns in newspapers and magazines and wellness programs on television, and health promotion advertisements. With the advancement of technology, new media provide a rare opportunity to improve the efficiency of health information dissemination. A previous study proved that "individuals who regularly use new media to access medical and health information have better health status." Therefore, how to make good use of new media to improve the efficiency of health information dissemination has become an issue that should be paid attention to nowadays.

Among the many types of new media, short video platforms are important for improving the efficiency of health information dissemination. The originality, interactivity, and sociality of short videos allow the younger generation to have a better user experience and engagement when seeking health information. At the same time, short videos provide diverse forms of information presentation and contain rich technical functions, such as commenting, chatting, following, liking and live streaming, which makes the public more willing to obtain health information through short video platforms. Besides, the popularity and usage of short videos are increasing among some older age groups. The above features imply that health information can enhance its influence through short videos. At present, the most representative short video platform in China is the short video social software "TikTok". According to a statistic in 2021, "45.2% of short video users choose to use TikTok, which has also become the short video platform with the largest number of users in China." Therefore, a content analysis of the health messages that are better disseminated in the Jitterbug platform, understanding their current situation and making suggestions for their future development will help to further improve the efficiency of the dissemination of health messages.

2. Analysis of the advantages of using a short video platform to provide health information

The reason why health information in short video platforms has a better dissemination effect is that the established characteristics of short video platforms boost the dissemination of health information. Specifically, the large number of users, the algorithm technology and the diversification of content forms make the health information in short video platforms have the advantages of equality, precision and diversity.

The first is the equalization of information reception. In the traditional media era, information dissemination has obvious inequality. According to the theory of the "knowledge gap" proposed by American scholar Ticino, "audiences with higher social-economic status have faster information reception speed and more information reception volume, which will widen the knowledge gap among audiences." The

reason for the emergence of the “knowledge gap” is that some audiences have difficulties in accessing the media to obtain information due to restrictions in economic and knowledge backgrounds, but in the new media era, the emergence of short video platforms is reducing this phenomenon. According to CNNIC, “As of June 2021, the size of short video users in China reached 934 million people, accounting for 90.5% of the overall number of Internet users.” The high popularity of short videos means that more people have the opportunity to receive health information through short video platforms, and health information can reach audiences with different economic levels, knowledge backgrounds and ages through short video platforms. The low technical threshold of short video allows everyone to change from audience to disseminator, and the commenting function allows health information disseminators and users to communicate with each other intuitively and to answer and interact with health questions raised by users, which greatly enhances the subjective initiative of user participation and reflects the social attributes of short video platforms. This helps promote the equalization of health information access, which in turn promotes more efficient dissemination of health information.

The second is the precision of information dissemination. Health information is a broad concept, which includes all information related to human health, and can be subdivided into multiple levels such as disease, health, medicine and health care, and each level contains multiple subcategories. The massive amount of information on the short video platform allows various kinds of health information to be disseminated in it, which makes it more difficult for the audience to obtain the target information. In response to this problem, the solution given by the short video platform is to develop a targeted algorithm system for the platform’s user data, to carry out accurate pushing of information. Accurate push is one of the basic operating strategies of the short video platform. “The short video platform collects the user’s profile information and draws a portrait of the user through algorithmic technology, then matches the information that exists on the platform with the portrait, and finally pushes the information to the user’s eyes.” This is the basic operating logic of short video platforms to achieve accurate pushing. The benefit of this strategy for health information dissemination is that the audience can not only save time in information screening but also quickly get the health information they want to know in the massive amount of information and improve the efficiency of information dissemination by improving the accuracy of information dissemination.

Finally, it is the diversification of information presentation methods. On the one hand, compared with paper media and broadcast media, the advantage of the short video is that it can present information in three forms: picture, sound and text at the same time, which is extremely important for the dissemination of health knowledge. Health information often contains some profound knowledge, and how to reduce the difficulty for audiences to accept such knowledge has been a major problem for communicators for a long time. In previous studies, it has also been suggested that “health communication needs to combine professionalism and colloquialism, so that ordinary people can understand the information accurately.” In short video platforms, health information communicators can often visualize knowledge to audiences through hands-on demonstrations or animated presentations, helping audiences to understand the knowledge more fully and intuitively, thus influencing their attitudes and behaviors and achieving the desired effect of health communication. On the other hand, compared with TV media, the concise presentation of short video information is more in line with the requirements of the public in the era of fragmentation, and the public can use the fragmented time to browse relevant information. Compared with traditional new media, which presents information with text and pictures, the time for users to read and obtain information is greatly shortened, and this convenience of being available at any time further expands the influence of health information.

Health information on short video platforms has the advantages of equal information reception, accurate information dissemination and diversified presentation methods, which makes short video platforms the main forum for health information dissemination nowadays. Despite the many advantages, there is a big difference in the dissemination effect of health science videos in short video platforms. How to make use of these advantages to optimize the dissemination of health information is an issue that needs to be further explored.

3. The content analysis of health information on the short video platform

Health science videos with good communication effects often have common characteristics, which are closely related to their good communication effects. Therefore, taking the representative short video platform “TikTok” as the sample range, and analyzing the highly effective health popularization short videos at three levels of video information, content quality and audience response will help to sort out their common characteristics and provide reference values for the subsequent health popularization short videos as experience. This analysis is divided into the following two steps.

The first step was the selection and crawling of samples. By entering four keywords of health knowledge, disease, health knowledge and health science in the search engine of TikTok platform to search, and choosing to crawl the video information by the number of likes using a Python program, a total of 468 valid videos were obtained, and on this basis, 100 short videos were selected for content analysis from high to low according to the dissemination effect. “Communication effect refers to the psychological, attitudinal and behavioral changes caused by the communication behavior in the recipients.” The communication effect is an abstract concept that needs to be quantified before ranking the communication effect of short videos. In short video platforms, audience behaviors such as likes, comments, retweets and favorites of a video can be considered as the result of changes in audience psychology, attitudes and behaviors. Therefore, the number of likes, comments, retweets and favorites harvested by a video can reflect the dissemination effect of short videos. Since each video harvests different data, in calculating the value of each video dissemination effect, we need to use the natural logarithm to standardize the four data first, then use the entropy value assignment method to assign weights to the four indicators of likes, comments, favorites and retweets, and finally calculate the dissemination effect of each short video and select the 100 videos with the highest value for content analysis. The formula for calculating the

dissemination effect is as follows.

E is the video’s communication effect value, X1 , X2 , X3 and X4 are the number of likes, comments, favorites and retweets of each video respectively. B1 , B2 , B3 and B4 are the corresponding weight values. In addition, the 15 most liked comments in the comment section of each video were also crawled and added to the content analysis as samples to further understand the audience’s emotional response to the health messages.

The second step was to codify and analyze the crawled samples through Divominer software. Firstly, by carefully reading the existing studies and combining the communication characteristics of short videos, it was decided that the content analysis would be conducted at three levels: video information, content quality and audience reflection. Secondly, 20 samples out of 100 were randomly selected for pre-coding processing and determining the final coding scheme, which is shown in Table 1. Finally, in terms of reliability testing, to ensure the scientific nature of the research results, 20 samples were selected from the research sample to be coded independently by two coders each, and the final reliability calculation function of Divominer yielded a Holsti coefficient of 0.79 between coders, indicating that the reliability between coders was good and the data could be further analyzed.

Table 1: Content coding table

Analytical level	Serial number	Category	Code item
Video Information	1	Video Length	1= within 30 seconds; 2= 30 seconds to 1 minute; 3= 1 minute to 2 minutes; 4= more than 2 minutes
	2	Video Source	1=Personal accounts of practicing doctors/medical experts; 2=Official accounts of hospitals; 3=Official accounts of Internet medical institutions; 4=Accounts of news media; 5=Other personal self-publishing
Content Quality	3	Level of detail	1=details and argues the point; 2=details; 3=brief summary; 4=brief mention
	4	Whether to cite research data	1=yes; 2=no
	5	Presentation	1=live recording of the consultation; 2=live demonstration; 3=personal narration; 4=original animation
	6	Presentation Strategy	1 = set up suspense; 2 = open the door; 3 = give a warning; 4 = partially exaggerate
Audience feedback	7	Emotional reaction to highly liked comments	1 = questioning (go to category 8); 2 = expressing confusion; 3 = creating anxiety; 4 = expressing getting help; 5 = expressing appreciation
	8	Reasons for the challenge	1=Conflict with other science video content; 2=Different from personal life experience; 3=Lack of data; 4=Some content is difficult to achieve

Through further analysis of the coding results, it was found that the health science short videos with good dissemination effects share some common characteristics in terms of content quality and dissemination strategies, which are closely related to the dissemination efficiency of health science short videos and are of great significance in guiding the subsequent efficient dissemination of health information on short video platforms.

One of them is the detailed video content discourse. On the one hand, existing studies generally believe that audiences in the era of fragmentation will be more inclined to receive short, flat and fast fragmented information. However, the data analysis shows that among the 100 samples taken, 40% of the videos were over 2 minutes long, and the number of videos between 1 minute and 2 minutes accounted for 26% of the total number of videos. The length of videos is often directly related to the richness of video content, so it can be inferred that in the field of health information dissemination on short video platforms, short videos with richer content and longer length not only are not rejected in large numbers, but also reflect good dissemination effects. On the other hand, the results of the third item of the coding category “content detail” show that 45% of the videos have detailed content, i.e. the communicator introduces the main content of the video topic in detail. In 33% of the cases, the content was very detailed, i.e., the communicator gave a detailed description of the main content of the video and also extended it to other related knowledge or gave examples to help the audience understand it. This shows that short videos with detailed content on health science are more likely to be loved by audiences.

The second is that the video content has credibility. The credibility of information is one of the important prerequisites for audiences to accept information. From the results of the coding analysis, the characteristics of health science short videos with high credibility that have high communication efficiency are mainly reflected in two aspects. On the one hand, it is the subject of communication. Among the surveyed samples, 72% of the videos originated from the personal ShakeYin accounts of practicing doctors or medical experts. Sixteen percent of the videos came from the official accounts of Internet medical institutions, such as Dr. Dingxiang and Southern Health, which have all passed the certification audit of the Jitterbug platform. Professionals are often seen as representatives of industry authority, and messages delivered through experts and scholars are more likely to be believed and received by most audiences, which undoubtedly helps improve the dissemination of health information. Another aspect is whether the video content cites relevant research findings or data. Among the collected samples, 69% of the short videos cited the conclusions of relevant studies or relevant data issued by authoritative institutions,

and some practicing doctors would also appropriately mention relevant cases they encountered in their real work. Research findings and data can make the information delivered more scientific and credible, while the elaboration of relevant cases is conducive to both bringing the distance between the communicator and the audience and likewise improving the credibility of the information.

Thirdly, video communication used a variety of strategies. In the collected samples, the content presentation strategies used in health science short videos can be divided into four main types, namely, opening the door, setting up suspense, giving warnings and partially exaggerating, and the various strategies often interact with each other. Among them, the most frequently used strategy is “opening the door”, i.e., the title or the beginning of the video to point out the topic of the video, so that the audience can understand the main information straightforwardly and choose whether to continue watching, 53% of the videos use this strategy. Once audiences find that the main content of the video meets their expectations, they will engage with it to get more information. The “set the stage” and “give a warning” strategies were also seen repeatedly, with 45% and 30% of videos using these strategies, respectively. “Set up suspense” is a tactic that arouses the curiosity of the audience by setting up questions and making them guess what message the video is going to convey. “Giving warning” motivates audiences to watch videos by informing them of potential risks, as they try to find ways to effectively avoid them by receiving more information after receiving risk signals. As a whole, the underlying logic of these strategies is to motivate audiences to receive further information. It can be inferred that effectively motivating audiences to obtain information is a major element in improving the effectiveness of health information dissemination.

The common features of health science short videos explain why they have good communication effects, and these features can be used as experience to provide directional guidance for the future dissemination of health information on short video platforms.

4. Realistic dilemma of health information dissemination and coping strategies

Although the samples were taken for the study all have good communication effects and their successful experiences can serve as a guide, the content analysis also reveals that some of them still have problems that affect the effectiveness of health message communication.

On the one hand, audiences cannot distinguish the authenticity of health information. Health information is highly specialized information, which requires the recipients to have sufficient knowledge background to independently judge the authenticity of the information, but most audiences lack this knowledge background. In the process of coding analysis, the 15 most liked comments in the comment section of each video were selected for analysis to clarify how most audiences reflected the information conveyed by the video. The results of the coding analysis showed that the videos with audiences questioning the authenticity of the information in the comment section accounted for 30% of the total sample. Of these questioned videos, 68% were questioned because they were perceived to conflict with other scientific information and 71% were questioned because they were perceived to be inconsistent with personal daily life experiences. This shows that most audiences cannot judge the authenticity of information based on theories, and they judge more by the degree of conformity between their existing perceptions and the information, but this “empirical” approach obviously cannot help them distinguish the authenticity correctly.

On the other hand, the dissemination of health information on short video platforms triggers audiences’ anxiety about their physical conditions.. Media information can influence the attitudes and behaviors of most Internet users and the direction of public opinion, leading to changes in public sentiment. It is one of the purposes of health information dissemination to help the public to have more health knowledge so that they can reduce the unknown about their health conditions and disease development and thus face life with a stable mind. However, health information dissemination in short video platforms today has the problem of triggering audience anxiety. In the collected sample, 21% of the video comments indicated that they had doubts and anxiety about their health conditions after receiving the information from the communicators, especially in the case of short videos on disease science. When the communicator describes certain characteristics that may represent a disease in humans, the audience with similar characteristics will doubt whether they have a disease, and thus fall into anxiety about their health condition. This phenomenon is also often seen in food and health information, when the communicator informs that a certain food may cause disease, the audience will panic because they love to eat the food. This is related to the excessive use of the “give warning” communication strategy, which aims to attract the attention of the audience by making them perceive the risk. At the same time, it is also related to the language used by communicators. Therefore, how to optimize the language and communication strategy to make the audience perceive the risk and pay attention to it, without making them overly anxious, is an urgent issue nowadays.

The problems of health information dissemination on short video platforms undoubtedly hinder the improvement of its dissemination efficiency, and only by solving these problems with the concerted cooperation of multiple subjects can the dissemination efficiency of health information on short video platforms be improved. The analysis shows that two tasks need to be accomplished to further improve the dissemination effect of health information on short video platforms. One task is to focus on the real-life dilemma and find a solution strategy, and the other task is to promote and popularize the existing practical experience. These two tasks need to be accomplished through the joint efforts of all the actors involved in the process of content dissemination.

First, practicing doctors and medical institutions, as the main disseminators of health information, should enhance the professionalism of health information dissemination and establish user identification. There are different types of disseminators of popularized health knowledge in short video platforms, including expert doctors, medical institutions, news media and personal self-media. Among them, expert doctors and medical institutions are the main disseminators because they are considered to have authority in the health field and the information disseminated is more easily accepted by the audience. However, because these communicators lack professional knowledge

related to information dissemination, there are problems such as an inappropriate presentation or use of strategies in the process of information dissemination, which affects the audience's reception of health information. This not only does not guarantee the authenticity and professionalism of health information dissemination, but also fuels the spread of various rumors about health due to the huge influence of short video platforms. Therefore, communicators should improve the professionalism of information dissemination by learning the knowledge related to new media communication, to improve the effectiveness of health information dissemination. In addition, this issue can also be popularized through the way of professionally produced content (PGC), i.e. medical institutions can recruit professionals in the field of information dissemination by making them responsible for short video planning, production and promotion, and then the practicing doctors are responsible for appearing in the narration. This is conducive to bringing the advantages of both into play at the same time and enhancing the communication effect of health science popularization short videos. The professional team of health communication should also take a niche and specialize in health information dissemination, which can target user groups to subdivide health information and refine vertical field classification to improve the level of information quality.

Secondly, as the coordinator and planner of health information dissemination, government departments should improve the planning system and promote the construction of a coordinated online and offline pattern of health information dissemination. The government should revise and improve its plans and provide innovative solutions, such as visualizing and supporting the vast amount of data available on short video platforms. Academic research on health risks can be presented to the public through new media short-form video platforms after reasonable justification, relying on short-form video channels for instant presentation and unrestricted dissemination. Although short-form video platforms help to enhance the effectiveness of health information dissemination, it does not mean that health information only needs to be disseminated on short-form video platforms. On the contrary, it is still necessary to retain offline health information dissemination activities. As mentioned earlier, some audiences have developed anxiety after receiving health information, and some audiences are still confused due to the unclear representation of health information disseminators. These issues can be effectively addressed in offline health information dissemination activities. In offline health communication activities, face-to-face communication can help communicators understand the emotional reactions of recipients in real time, so that they can change their communication strategies and avoid factors that have a negative impact on the recipients. Therefore, only by building a coordinated online and offline health information communication pattern can we optimize the effectiveness of communication and minimize the risk impact.

Again, short video platforms, as the first responsible person for the supervision of health information dissemination, should improve the identification and warning mechanism of false information. The main limitation of social media is the lack of reliability of the information, and the same is true for health information on short video platforms. Social media platforms also influence the level of trust in rumors among the users of social media platforms. In health information dissemination, once audiences pick up false and biased health information, their physical and mental health will be potentially threatened, but in today's short video platforms, most audiences cannot independently identify the authenticity of health information. To address this situation, short video platforms as regulators should step in. For example, health information disseminators should be strictly audited, individuals should be provided with relevant professional qualification certificates or certificates of practice, and enterprises should be provided with complete national certification information. At present, the audit mechanism and staffing of short video platforms are not able to make a correct judgment on the authenticity of health information. Therefore, on the one hand, short video platforms need to cooperate with individuals with relevant knowledge backgrounds, such as students in medical school or practitioners in the health field and invite them to join in the auditing activities. On the other hand, when a piece of information is controversial, the platform owner can give a prominent warning sign in the video message to inform the audience that the information is controversial and to officially dispel some rumors to ensure that users have access to quality health information.

Finally, short video users, as recipients of health information, should improve their media literacy and awareness of health risks. "Media literacy is the ability to access, evaluate, produce and communicate using various forms of media, and it focuses on critical thinking." Audiences with good media literacy tend to be able to receive information without taking it at face value and to seek further verification. This can help them reduce the impact of disinformation. But in today's short-form video platforms, the spread of negativity and the rise of anti-intellectualism make it difficult for most audiences to receive information rationally. For example, some audiences have an all-or-nothing attitude toward health information simply because the content of the information is different from their own life experiences, and even label the purveyors of the information with negative labels. Given this, users of short video platforms who are the recipients of transmission should take the initiative to carry out learning, remind themselves to receive information critically in the process of receiving information, seek further proof of uncertain information, and improve their media literacy and information screening ability.

5. Conclusions

This study aims to explore the characteristics and performance of health information dissemination in Chinese short video platforms, and attempts to analyze the dilemma of health information and provide effective health communication strategies. The short video platform has promoted the equalization of the reception, precision of dissemination and diversification of the presentation of health information, which is conducive to enhancing the effectiveness of health information dissemination. The content analysis reveals that efficiently disseminated health science short videos are generally characterized by detailed exposition, high credibility and a variety of strategies, which can be used as experience to guide subsequent health information dissemination activities. At the same time, the dissemination of health information on short-form video platforms today also faces the real dilemma of audiences not being able to distinguish between the truth

and falsity of information and health information causing anxiety. Therefore, communicators should improve the professionalism of health information dissemination, short video platforms should improve the identification and warning mechanism of information, authoritative media should combine with the platforms to guide public opinion, and the government should promote the establishment of a collaborative communication pattern between online and offline. Finally, audiences should also enhance their own media awareness in order to effectively improve the dissemination of health information.

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